Clean version of the amended independent claim 9 follows:

9. An enhanced volume phase grating comprising:

a rigid support means;

a volume phase medium attached to said rigid support means;

a transparent cover means attached to said volume phase medium with a transparent adhesive to provide a sealant and protectant for said volume phase medium;

the bulk refractive index, n, of said volume phase medium being periodically modulated within the thickness, T, of said volume phase medium in a direction parallel to the surface of said volume phase medium, with a peak value of refractive index equal to $n+\Delta n$, where Δn is the peak modulation of said bulk refractive index, n, the periodic sequence of said peak values of said refractive index throughout said thickness, T, of said volume phase medium creating a periodic structure of Bragg surfaces within said volume phase medium with a period, d, where

said period, d, is established by selecting any two positive integers s and p, such that s > p, and any arbitrary internal angle of incidence, α, calculating the internal angle of diffraction, β, with the following equation:

$$\beta = \text{either } a\cos\left(\frac{2p-1}{2s-1}\right)-\alpha \quad \text{or} \quad 180-a\cos\left(\frac{2p-1}{2s-1}\right)-\alpha$$

and using the following equation:

$$d=\frac{\lambda}{n(\sin\alpha+\sin\beta)},$$

where λ is the nominal free-space wavelength for which said enhanced volume phase grating is designed,

and said peak modulation, Δn, of said bulk refractive index is obtained from the following equation:

$$\Delta n=\frac{\lambda}{T}\left(\frac{2s-1}{2}\right)\sqrt{(\cos\alpha)\left(\cos\alpha-\frac{\lambda}{nd}\tan\left(\frac{\beta-\alpha}{2}\right)\right)},$$